

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for fabricating a resist pattern, comprising the steps of:

forming a pre-resist pattern through exposure treatment and development treatment, and

ash-treating the pre-resist pattern to form ~~thea~~ narrowed resist pattern-
narrowed.
2. (Original) A fabricating method as defined in claim 1, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.
3. (Currently Amended) A fabricating method as defined in claim 1, wherein the pre-resist pattern and the resist pattern ~~is~~are composed of a photoresist layer as a top layer and a polymethylglutarimide layer as a bottom layer.
- A₁ 4. (Currently Amended) A fabricating method as defined in claim 3, comprising the steps of:

forming the polymethylglutarimide layer on a given base material,

forming the photoresist layer on the polymethylglutarimide layer,

exposing and developing the photoresist layer via a given mask,

partially removing the remaining ~~polymethylglutarimide~~ polymethylglutarimide layer with an alkaline water solution to form the pre-resist pattern, and

ash-treating the pre-resist pattern to form the narrowed resist pattern.
5. (Currently Amended) A fabricating method as defined in claim 4, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed

trapezoid longitudinal cross-sections section, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

6. (Currently Amended) A fabricating method as defined in claim 1, wherein the pre-resist pattern and the resist pattern isare made of a picture reversion ~~type~~ photoresist which is made by adding a negative working agent to a positive ~~type~~ photoresist including a mixture of alkaline soluble phenol resin and ~~naphthoquinonediazide~~ naphthoquinonediazide.

7. (Currently Amended) A fabricating method as defined in claim 6, comprising the steps of:

coating the picture reversion ~~type~~ photoresist on a given base material,
exposing the picture reversion ~~type~~ photoresist via a given mask,
heating the picture reversion ~~type~~ photoresist after the exposure treatment,
developing the picture reversion ~~type~~ photoresist after the heating treatment to

form the pre-resist pattern, and

ash-treating the pre-resist pattern to form the narrowed resist pattern.

8. (Currently Amended) A fabricating method as defined in claim 7, further comprising ~~the~~ a step of exposing the picture reversion ~~type~~ photoresist uniformly after the heating treatment and before the developing treatment.

9. (Currently Amended) A fabricating method as defined in claim 7, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross ~~sections~~ section, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

10. (Currently Amended) A fabricating method as defined in claim 1, wherein the pre-resist pattern and the resist pattern isare made of a novolac ~~type~~ positive photoresist containing an additive phenol dissolution accelerator.

11. (Currently Amended) A fabricating method as defined in claim 10, comprising the steps of:

coating the novolac ~~type~~ positive photoresist containing the additive phenol dissolution accelerator on a given base material,

exposing via a given mask and developing the novolac ~~type~~ positive photoresist, to form the pre-resist pattern, and

ash-treating the pre-resist pattern to form the narrowed resist pattern.

12. (Currently Amended) A fabricating method as defined in claim 11, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross-sections section, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

13. (Previously Amended) A method for patterning a thin film using a resist pattern as defined in claim 1.

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14. (Currently Amended) A method for patterning a thin film, comprising the steps:

forming a thin film to be milled on a given base material,

forming a polymethylglutarimide layer on the thin film to be milled,

forming a photoresist layer on the polymethylglutarimide layer,

exposing and developing the photoresist layer via a given mask,

partially removing the remaining ~~polymethylglutarinide~~ polymethylglutarimide layer with an alkaline water solution to form a pre-resist pattern constructed of the photoresist layer as a top layer and the ~~polymethylglutarinide~~ polymethylglutarimide layer as a bottom layer,

ash-treating the pre-resist pattern to form a narrowed resist pattern, and

milling the thin film to be milled via the narrowed resist pattern to obtain a patterned thin film.

15. (Original) A patterning method as defined in claim 14, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

16. (Currently Amended) A patterning method as defined in claim 14, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross section, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

17. (Currently Amended) A method for patterning a thin film, comprising the steps of:

forming a thin film to be milled on a given base material,

coating on the thin film to be milled a picture reversion ~~type~~ photoresist which is made by adding a negative working agent to a positive ~~type~~ photoresist including a mixture of alkaline soluble phenol resin and ~~naphthoquinonediazide~~ naphthoquinonediazide,

exposing the picture reversion ~~type~~ photoresist via a given mask,

heating the picture reversion ~~type~~ photoresist after the exposure treatment,

developing the picture reversion ~~type~~ photoresist after the heating treatment to form a pre-resist pattern,

ash-treating the pre-resist pattern to form a narrowed resist pattern, and

milling the thin film to be milled via the narrowed resist pattern to obtain a patterned thin film.

18. (Currently Amended) A patterning method as defined in claim 17, further comprising the step of exposing the picture reversion ~~type~~ photoresist uniformly after the heating treatment and before the developing treatment.

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19. (Previously Amended) A patterning method as defined in claim 17, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

20. (Currently Amended) A patterning method as defined in claim 17, wherein the pre-resist pattern ~~and the resist pattern have their respective~~has a T-shaped or reversed trapezoid longitudinal cross-sectionssection, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

21. (Currently Amended) A method for patterning a thin film, comprising the steps of:

forming a thin film to be milled on a given base material,

coating a novolac ~~type~~-positive photoresist containing an additive phenol dissolution accelerator on the thin film to be milled,

exposing via a given mask and developing the novolac ~~type~~-positive photoresist, to form a pre-resist pattern,

ash-treating the pre-resist pattern to form a narrowed resist pattern, and

milling the thin film to be milled via the narrowed resist pattern to obtain a patterned thin film.

22. (Original) A patterning method as defined in claim 21, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

23. (Currently Amended) A patterning method as defined in claim 21, wherein the pre-resist pattern ~~and the resist pattern have their respective~~has a T-shaped or reversed trapezoid longitudinal cross-sectionssection, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

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24. (Currently Amended) A method for patterning a thin film, comprising the steps of:

forming a polymethylglutarimide layer on a given base material,
forming a photoresist layer on the polymethylglutarimide layer,
exposing and developing the photoresist layer via a given mask,
partially removing the remaining ~~polymethylglutarimide~~polymethylglutarimide layer with an alkaline water solution to form a pre-resist pattern constructed of the photoresist layer as a top layer and the ~~polymethylglutarimide~~polymethylglutarimide layer as a bottom layer,

ash-treating the pre-resist pattern to form a narrowed resist pattern,
forming a thin film to be patterned on the base material so as to cover the narrowed resist pattern, and

lifting-off the resist pattern to obtain a patterned thin film.

25. (Original) A patterning method as defined in claim 24, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

26. (Currently Amended) A patterning method as defined in claim 24, wherein the pre-resist pattern ~~and the resist pattern have their respective~~has a T-shaped or reversed trapezoid longitudinal cross-sections~~section, and the narrowed resist pattern has a~~corresponding T-shaped or reversed trapezoid cross-section.

27. (Currently Amended) A method for patterning a thin film, comprising the steps of:

coating on a given base material a picture reversion ~~type~~ photoresist which is made by adding a negative working agent to a positive ~~type~~ photoresist including a mixture of alkaline soluble phenol resin and ~~naphthoquinonediazide~~naphthoquinonediazide,

exposing the picture reversion ~~type~~-photoresist via a given mask,
heating the picture reversion ~~type~~-photoresist after the exposure treatment,
developing the picture reversion ~~type~~-photoresist after the heating treatment to
form a pre-resist pattern,

ash-treating the pre-resist pattern to form a narrowed resist pattern,
forming a thin film to be patterned on the base material so as to cover the
narrowed resist pattern, and
lifting-off the resist pattern to obtain a patterned thin film.

28. (Currently Amended) A patterning method as defined in claim 27, further
comprising ~~the~~ a step of exposing the picture reversion ~~type~~-photoresist uniformly after the
heating treatment and before the developing treatment.

29. (Previously Amended) A patterning method as defined in claim 27, wherein
the ashing treatment is carried out by using a process gas composed of oxygen gas containing
at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

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Cont. 30. (Currently Amended) A patterning method as defined in claim 27, wherein the
pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed
trapezoid longitudinal cross-sectionssection, and the narrowed resist pattern has a
corresponding T-shaped or reversed trapezoid cross-section.

31. (Currently Amended) A method for patterning a thin film, comprising the
steps of:

coating a novolac ~~type~~-positive photoresist containing an additive phenol
dissolution accelerator on a ~~give~~given base material,

exposing via a given mask and developing the novolac ~~type~~-positive
photoresist, to form a pre-resist pattern,

ash-treating the pre-resist pattern to form a narrowed resist pattern,

forming a thin film to be patterned on the base material so as to cover the narrowed resist pattern, and

lifting-off the resist pattern to obtain a patterned thin film.

32. (Original) A patterning method as defined in claim 31, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

33. (Currently Amended) A patterning method as defined in claim 31, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross-sections section, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

34. (Currently Amended) A method for patterning a thin film, comprising the steps of:

forming a thin film to be milled on a given base material,

forming a polymethylglutarimide layer on the thin film to be milled,

forming a photoresist layer on the polymethylglutarimide layer,

exposing and developing the photoresist layer via a given mask,

partially removing the remaining ~~polymethylglutarimide~~ polymethylglutarimide

layer with an alkaline water solution to form a pre-resist pattern constructed of the photoresist layer as a top layer and the ~~polymethylglutarimide~~ polymethylglutarimide layer as a bottom layer,

ash-treating the pre-resist pattern to form a narrowed resist pattern,

milling the thin film to be milled via the narrowed resist pattern to form a pre-patterned thin film,

forming a thin film to be patterned on the base material so as to cover the narrowed resist pattern, and

lifting-off the narrowed resist pattern to obtain a patterned thin film including the pre-patterned thin film.

35. (Original) A patterning method as defined in claim 34, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

36. (Currently Amended) A patterning method as defined in claim 34, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross-sectionssection, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

37. (Currently Amended) A method for patterning a thin film, comprising the steps of:

forming a thin film to be milled on a given base material,

coating on the thin film to be milled a picture reversion ~~type~~ photoresist which is made by adding a negative working agent to a positive ~~type~~ photoresist including a mixture of alkaline soluble phenol resin and ~~naphthoquinonediazide~~ naphthoquinonediazide,

exposing the picture reversion ~~type~~ photoresist via a given mask,

heating the picture reversion ~~type~~ photoresist after the exposure treatment,

developing the picture reversion ~~type~~ photoresist after the heating treatment to form a pre-resist pattern,

ash-treating the pre-resist pattern to form a narrowed resist pattern,

milling the thin film to be milled via the narrowed resist pattern to obtain a pre-patterned thin film,

forming a thin film to be patterned on the base material so as to cover the narrowed resist pattern, and

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lifting-off the narrowed resist pattern to obtain a patterned thin film including the pre-patterned thin film.

38. (Currently Amended) A patterning method as defined in claim 37, further comprising ~~the~~ a step of exposing the picture reversion ~~type~~ photoresist uniformly after the heating treatment and before the developing treatment.

39. (Previously Amended) A patterning method as defined in claim 37, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

40. (Currently Amended) A patterning method as defined in claim 37, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross-sectionssection, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

41. (Currently Amended) A method for patterning a thin film, comprising the steps of:

forming a thin film to be milled on a given base material,

coating a novolac ~~type~~ positive photoresist containing an additive phenol dissolution accelerator on the thin film to be milled,

exposing via a given mask and developing the novolac ~~type~~ positive photoresist, to form a pre-resist pattern,

ash-treating the pre-resist pattern to form a narrowed resist pattern,

milling the thin film to be milled via the narrowed resist pattern to obtain a pre-patterned thin film,

forming a thin film to be patterned on the base material so as to cover the narrowed resist pattern, and

lifting-off the narrowed resist pattern to obtain a patterned thin film including the pre-patterned thin film.

42. (Original) A patterning method as defined in claim 41, wherein the ashing treatment is carried out by using a process gas composed of oxygen gas containing at least one of fluorine-based gas and nitrogen/hydrogen gas mixture.

43. (Currently Amended) A patterning method as defined in claim 41, wherein the pre-resist pattern ~~and the resist pattern have their respective~~ has a T-shaped or reversed trapezoid longitudinal cross-sectionssection, and the narrowed resist pattern has a corresponding T-shaped or reversed trapezoid cross-section.

44. (Previously Amended) A method for manufacturing a micro device, using a patterning method for a thin film as defined in claim 13.

45. (Original) A manufacturing method as defined in claim 44, wherein the micro device is a thin film magnetic head.

46. (Currently Amended) A manufacturing method as defined in claim 45, wherein ~~the~~ a magnetoresistive effective ~~type~~ thin film element of the thin film magnetic head is manufactured by a patterning method comprising the steps: forming a thin film to be milled on a given base material, forming a polymethylglutarimide layer on the thin film to be milled, forming a photoresist layer on the polymethylglutarimide layer, exposing and developing the photoresist layer via a given mask, partially removing the remaining ~~polymethylglutarinide~~ polymethylglutarimide layer with an alkaline water solution to form a pre-resist pattern constructed of the photoresist layer as a top layer and the ~~polymethylglutarinide~~ polymethylglutarimide layer as a bottom layer, ash-treating the pre-resist pattern to form a narrowed resist pattern, and milling the thin film to be milled via the narrowed resist pattern to obtain a patterned thin film.

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